monadenias living in Shasta and Siskiyou Counties, either conclusion would be premature.

I am grateful to Allyn Smith for the loan of comparative specimens.

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DESCRIPTION OF A NEW TERRESTRIAL SNAIL FROM SAN NICOLAS ISLAND, CALIFORNIA (GASTROPODA: STYLOMMATOPHORA)

The presence of terrestrial snails, both living and subfossil, on San Nicolas Island, approximately 65 miles from the southern California mainland, has been remarked by numerous authors (Cooper, 1869; Bowers, 1890; Hemphill, 1901; Lowe, 1903; Vedder and Norris, 1963; among others). In April 1974, in connection with a study of land snails of the California Channel Islands, conducted for the Office of Endangered Species and International Activities, Department of the Interior, I received some specimens of *Micrarionta* from San Nicolas Island which could not be referred to any species previously described. The specimens were sent by Jan K. Larson, wildlife biologist with the Naval Undersea Center, San Clemente Island, and were collected by him, Philip J. Regal, and Roger Anderson. Additional material of the same species was located in the collections of the Academy of Natural Sciences, Philadelphia, and the Department of Geology, California Academy of Sciences. Allyn G. Smith of the latter department kindly loaned comparative material from his personal collection. In October 1974, Mr. Larson sent additional, living, specimens, which have furnished the basis for an anatomical description.

Micrarionta opuntia, new species

Figure 1

Diagnosis: A *Micrarionta* of 4¾ to 5¼ whorls, lacking spiral sculpture, with upper surface punctate, umbilicus open but narrow, and ends of peristome strongly convergent.

Description: Shell small, depressed-globose, openly but narrowly umbilicate, of 4¾ to 5¼ whorls, moderately thin; spire low-conic, whorl profile convex, sutures impressed. Surface glossy to silky, very finely granular, with low, irregular, radial wrinkles more or less papillose on early whorls. Protoconch radially wrinkled. Whorls of spire punctate; punctations arranged in diagonal lines, less regular on later whorls, becoming spirally elongate on penultimate and body whorl, sparse on base and around umbilicus. Whorls enlarging slowly; body whorl slightly constricted and descending behind aperture. Peristome subcircular, its ends strongly convergent; lip sharply turned outward, not greatly thickened, moderately reflected at base, encroaching on umbilicus for less than ¼ of its diameter. Parietal wall convex, lightly calloused between ends of peristome. Color, under a light tan periostracum, pale brown with a purplish tinge, with chestnut-brown peripheral band bordered with white; base lighter; lip pinkish tan within.

Figure 1. Micrarionta opuntia, new species. Top, basal, and apertural views of holotype, 55212 CASGTC.

Dimensions of holotype: Height 6.5 mm; maximum diameter 10.5 mm; umbilicus 1.2 mm; whorls 5.

Type locality: Northeastern San Nicolas Island, Ventura Co, California, in depression or small burrow at base of prickly-pear plant (*Opuntia littoralis*); collected by J. K. Larson, P. J. Regal, R. Anderson, April 1974. The type lot (13 specimens) was found in a region of isolated prickly-pear and *Lycium* patches among annual grasses, with bare ground comprising approximately 40 percent of a unit area. The snails were found beneath the surface either covered by soil or clinging to the sides of the burrow.

Type material: Holotype, No. 55212, California Academy of Sciences Geology Type Collection; paratype, No. 55213 CASGTC. Additional paratypes in collections of Academy of Natural Sciences, Philadelphia, Field Museum of Natural History, Natural History Museum of Los Angeles County, and the private collections of W. B. Miller, A. G. Smith, S. S. Berry, and the author.

Referred material: Eight specimens, California Academy of Sciences locality 42909, San Nicolas Island, collected by George Willett; one of these is mature at a maximum diameter of only 8.2 mm. Two specimens, No. 86608, Academy of Natural Sciences, Philadelphia, San Nicolas Island, collected by Henry Hemphill before 1904. Thirty-five specimens from an old dump area 0.2 mi NE of military compound, San Nicolas Island, below wreckage of a jet plane and under boards, collected by J. K. Larson, 22–23 October 1974; California Academy of Sciences and the author's collection.

Anatomy: Mantle pale gray with extensive patches of black; mantle collar grayish white. Sole of foot whitish; dorsal integument light grayish tan, darker in head region. Right ocular apparatus passing between male and female genitalial systems. Atrium short; penis capacious, containing short, spherical verge, separated from epiphallus by a slight constriction. Epiphallic caecum long, complexly coiled. Dart sac absent. Single mucus gland present, its duct inserting about half way up vagina. Duct of spermatotheca stout; no spermatothecal diverticulum present.

Discussion: The genus *Micrarionta*, *sensu stricto* (type species, *Helix facta* Newcomb, 1864), comprises a taxonomically difficult group of species restricted to the southern members of the California Channel Islands—San Clemente, Santa Catalina, San Nicolas and Santa Barbara Islands—and Guadalupe Island, Baja California, Mexico. The most recent revision of the genus is that by Pilsbry (1939), who recognized 13 specific and infraspecific taxa. Extreme endemism (only one species, *M. feralis*, definitely occurs on more than one island) and significant differences between living and Quaternary subfossil populations attest to a rapid rate of evolution. Present discrimination of taxa by shell characters depends on size, sculpture, number of whorls and tightness of coiling, breadth of umbilicus and lip, as well as on less easily quantified details of shape. For many years the bulk of material available for study was that taken by the ardent (and at times intemperate) collector, Henry Hemphill, who did not localize his material except by island and habitually sent out specimen lots selected for uniformity—thus obscuring any evidence of population structure. (Hemphill did state [1901:137] concerning San Nicolas Island, "my time and operations were limited while there to the south end of that island.") Genitalial dissections, important for reckoning affinities in helminthoglyptid snails, have not been published for most of the taxa now recognized. A serological study, which could be valuable in showing relationships between the living species, would necessarily exclude the several taxa known only from subfossil specimens.

Micrarionta opuntia averages smaller than *Micrarionta facta* (Newcomb, 1864) of Santa Barbara Island, which in addition has from five to 5¾ whorls and less obvious punctation on the spire. *Micrarionta facta* frequently has faint incised spiral lines on the body whorl, particularly behind the outer lip, and the lip nearly covers the umbilicus. James G. Cooper (1869) reported *M. facta* from San Nicolas Island, and Cooper material in the University of California Museum of Paleontology contains five specimens so labeled. Seven other specimens are in the collection of A. G. Smith (No. 1938, *ex* Cooper collection). *Micrarionta facta* has not been reported recently from San Nicolas Island, and the record needs confirmation. The "larger, heavier, extinct variety" of *M. facta* cited from San Nicolas by Binney (1885: 149) is presumably *Micrarionta feralis* (Hemphill, 1901).

The extinct *Micrarionta sodalis* (Hemphill, 1901) of San Nicolas Island, a possible progenitor of *M. opuntia*, resembles the new species in that the ends of the peristome converge strongly and the umbilicus is open; its umbilicus, however, is wider than that of *M. opuntia*, the shell is more depressed, and a thicker callus connects the ends of the peristome. Gregg (1960) reported the absence of dart sac and descending mucus gland in "*Micrarionta sodalis*"; as other workers have not found *M. sodalis* living, he probably had *M. opuntia*.

"*Micrarionta sodalis* form *micromphala*" Pilsbry (1939:211; on p. viii as *Micrarionta sodalis micromphala*) was described as "higher than *sodalis*, approaching the form of *feralis*, the umbilicus very small, partially covered; shoulder band wanting or very weak; the lip-margins converging somewhat, but less than in *sodalis*. Lip rather narrow, thickened within, ivory-yellow to pinkish buff, with an ochraceous-tawny internal border. 9.7 × 14 mm, 5½ whorls; also running down to about 9 mm diameter. San Nicolas; only fossil specimens" (Pilsbry, 1939). The type lot was collected by Henry Hemphill before 1904. Only the holotype (ANSP 86833a) matches Pilsbry's description. It is a large, sturdy shell with much narrower umbilicus than either *M. sodalis* or *M. opuntia*. The paratype (ANSP 86833), although somewhat sandblasted, shows traces of incised spiral lines over much of the body whorl and is undoubtedly a specimen of *M. feralis*. The other specimens examined by Pilsbry (ANSP 86608), "running down to about 9 mm. diameter," are typical *Micrarionta opuntia*.

Micrarionta guadalupiana ("Dall" Pilsbry and Vanatta, 1898) has a more open, funnellike umbilicus, flatter whorl profile, and subangulate periphery. The ends of the nearly circular peristome approach each other closely. Like *M. opuntia* it lacks incised spiral sculpture and has a thin shell with papillose early whorls.

Other species and subspecies of *Micrarionta* are less similar. *Micrarionta rufocincta* (Newcomb, 1864) and *M. r. beatula* Cockerell, 1929, both from Santa Catalina Island, and *M. gabbi* (Newcomb, 1864)

from San Clemente Island, are distinctly spirally striate. In *Micrarionta feralis* (Hemphill, 1901) from from San Clemente and San Nicolas Islands, which is also spirally striate, the lip covers the umbilicus and the ends of the peristome converge only weakly.

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EDITORIAL: REQUEST FOR COVER ILLUSTRATIONS

On the cover of each issue of the Bulletin an illustration is printed. Usually this illustration pertains to an article in the issue or it may be one of general scientific interest. There is a marked shortage of such illustrations available for consideration and I would like to request that members of the Academy submit illustrations for consideration. These may be line-drawings or black and white photographs. The background of photographed subjects should be light and highly contrasted and submitted on black and white glossy paper. A brief, but informative, caption, including scientific name(s) of subject(s) and relevant points of interest, should accompany each illustration. In addition, the illustration should appropriately fill the space provided (see covers of past Bulletins). Please do not submit black and white negatives or color transparencies. James Dale Smith, Managing Editor.